We Claim:

1. A part-holding fixture for grinding wedged optical flats comprising:

a fixture body having an axis of rotation;

a first end of the fixture body being adapted for rotation by a machine work spindle;

a second end of the fixture body being adapted for mounting an optical flat having top and bottom planar surfaces;

an aperture formed through the first end of the fixture body in communication with a recess formed in the second end of the fixture body for drawing a vacuum through the fixture body;

a mounting land formed in the second end of the fixture body surrounding the recess and having a closed shape for forming a vacuum seal against the bottom planar surface of the optical flat;

a collar mounted on the fixture body surrounding the mounting land for centering the optical flat with respect to the rotational axis of the fixture body; and

the mounting land being oriented in a plane whose normal is inclined to the rotational axis of the fixture body for grinding the top planar surface at a wedge angle with respect to the bottom planar surface.

2. The part-holding fixture of claim 1 in which the mounting land is a part of a curved surface in the second end of the fixture body for limiting contact between the mounting land and the bottom planar surface of the optical flat.

3. The part-holding fixture of claim 1 in which the mounting land has an annular shape.

4. The part-holding fixture of claim 1 in which at least the second end of the fixture body is made of a material that is softer than optical glass to avoid scratching the optical flat.

5. The part-holding fixture of claim 1 in which the collar is shaped to engage both a periphery of the optical flat and a periphery of the fixture body.

6. The part-holding fixture of claim 5 in which the collar is made from a resin material.

7. A grinding system for machining optical flats with wedged planar surfaces comprising:

a rotatable work spindle having a central vacuum draw;

a rotatable tool spindle for supporting a grinding tool;

a feed system for relatively translating the rotatable work spindle and the rotatable tool spindle with respect to each other;

a part-holding fixture having a first end adapted for rotation with the rotatable work spindle about a rotational axis and a second end adapted for supporting an optical flat having top and bottom planar surfaces;

a central aperture formed through the part-holding fixture in communication with the central vacuum draw;

a mounting land formed on the second end of the part-holding fixture surrounding the central aperture and having a closed shape for forming a vacuum seal against the bottom planar surface of the optical flat; and

the bottom planar surface of the optical flat having a planar surface normal that is inclined to the rotational axis of the part-holding fixture when engaged with the mounting land formed on the second end of the part-holding fixture.

8. The grinding system of claim 7 further comprising a collar supported by the part-holding fixture in a position that surrounds the mounting land and engages a periphery of the optical flat for centering the optical flat with respect to the rotational axis of the part-holding fixture.

9. The grinding system of claim 7 in which the feed system relatively translates the rotatable work spindle and the rotatable tool spindle with respect to each other in a direction along the rotational axis of the part-holding fixture.

10. The grinding system of claim 7 in which a recess is formed in the second end of the part-holding fixture in communication with the central aperture.

11. The grinding system of claim 10 in which the mounting land surrounds the recess for communicating a pressure reduction within the recess against the bottom planar surface of the optical flat.

12. The grinding system of claim 7 in which the mounting land has an annular shape.

13. The grinding system of claim 12 in which the mounting land is formed as a part of a curved surface on the second end of the part-holding fixture.

14. The grinding system of claim 13 in which the mounting land is formed as a part of a toroidal surface.

15. A method of machining optical flats with wedged planar surfaces comprising the steps of:

mounting an optical flat having top and bottom surfaces on a first part-holding fixture;

rotating the first part-holding fixture about a work spindle rotational axis;

rotating a grinding wheel into engagement with the bottom surface of the optical flat about a tool spindle rotational axis;

grinding the bottom surface of an optical flat into a planar form having a planar surface normal that extends parallel to the work spindle rotational axis;

mounting the bottom planar surface of the optical flat on a second part-holding fixture in a position that orients the normal of the bottom planar surface at an inclination with respect to the work spindle rotational axis;

rotating the second part-holding fixture about the work spindle rotational axis;

rotating a grinding wheel into engagement with the top surface of the optical flat about the tool spindle rotational axis; and

grinding the top surface of the optical flat into a planar form having a planar surface normal that extends parallel to the work spindle rotational axis, but is inclined with respect to the planar surface normal of the bottom planar surface.

16. The method of claim 15 in which the steps of rotating the grinding wheel include rotating the grinding wheel about the tool spindle rotational axis parallel to the work spindle rotational axis.

17. The method of claim 16 in which the step of grinding the bottom surface includes forming the normal to the bottom surface parallel to both the work spindle rotational axis and the tool spindle rotational axis.

18. The method of claim 17 in which the step of grinding the top surface includes forming the normal to the top surface parallel to both the work spindle rotational axis and the tool spindle rotational axis.

19. The method of claim 15 in which the steps of grinding include feeding the grinding wheel in a direction parallel to the rotational axis of the tool spindle for engaging the top and bottom surfaces of the optical flat.

20. The method of claim 15 in which the step of mounting the bottom planar surface includes applying a vacuum pressure reduction against the bottom planar surface for holding the optical flat against a part-holding fixture that is rotatable about the work spindle axis.

21. The method of claim 20 in which the step of mounting the bottom planar surface includes engaging the bottom planar surface with a mounting land in an orientation that inclines the normal of the bottom planer surface with respect to the work spindle rotational axis.